

ABSTRACT

The present invention aims to provide a process which, by improving the conventional method of culturing the green alga *Haematococcus pluvialis*, promotes vegetative cell growth and astaxanthin biosynthesis so markedly as to enable efficient production of astaxanthin-containing lipids from the culture.

In order to attain this object, the green alga *Haematococcus pluvialis* is cultured with an organic nitrogen source being used in a medium at an AN/TN ratio of 65% or less, preferably 43% or less, more preferably 35% or less, to obtain algal bodies in which astaxanthin-containing lipids have been accumulated. If necessary, the astaxanthin-containing lipids may be extracted from the algal bodies and optionally purified.